



# Eye on the Sky

## NWS Louisville Partners with TRIMARC

*John Gordon*

*Meteorologist-in-Charge*

The core mission of the National Weather Service (NWS) is the protection of life and property. When citizens are driving on Louisville's local interstates, they may not receive severe weather warnings issued by the Louisville NWS office. Motorists might not be able to hear tornado sirens due to factors such as distance from the sirens and ambient highway and vehicle noise. To circumvent these

problems, NWS Louisville has worked out an agreement with Traffic Response and Incident Management Assisting the River Cities (TRIMARC) to put select warnings on their Dynamic Message Signs (DMS) and their Highway Advisory Radio (HAR, 530 AM) during the most extreme weather circumstances.

If you are driving down a metro Louisville interstate and the NWS issues (for select counties...see figure below) a Tornado Warning or Severe Thunderstorm

Warning for 70 mph winds and/or hail at least 1 inch in diameter, you will see a message on the DMSs saying "Severe Weather Alert - Tune to 530 AM." Tune your radio to the HAR and you will hear all valid warnings and statements.

Armed with this information motorists are able to take an alternate route, seek shelter, or pull safely off the highway until the threat has passed. We want to allow motorists plenty of time to escape harm's way and avoid entering into an area where the most dangerous part of a storm is located.

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Counties for which select warnings are placed on HAR (530 AM).

# Interactive Weather Graphs

*Did you know that you can create a graphical version of your National Weather Service official forecast? It's quick, easy, and a great new way of looking at your forecast!*

NOAA's National Weather Service Weather Forecast Office

## Louisville, KY

Home Site Map News Organization

Local forecast by "City, St" or Zip Code

City, St  Go

Current Hazards  
Watches / Warnings  
Outlooks  
U.S. Hazards  
Hurricane Info  
Safety Rules  
Submit Report

Current Conditions  
Observations  
Satellite Images  
Rivers & Lakes AHPS  
Precip Estimate  
Snow Cover

Radar Imagery  
Local Radar  
Nationwide

Forecasts  
Local Area  
Aviation  
Fire Weather  
Graphical  
**Interactive**  
Weather Radio  
Forecast Discussion  
Wx Planner  
Winter Weather  
Non Precipitation

Top News of the Day

- How to build a tornado machine
- Flooding in Richmond, Kentucky August 18
- Thunderstorms With High Winds Early Sunday Morning: Radar Images
- Additional News Headlines

Click on the map below for the latest forecast.

Read watches, warnings & advisories

Zoom Out

Short Term Forecast

Hazardous Weather Outlook

Map

Last map update: Mon, Aug. 21, 2006 at 9:19:26 pm EDT

Begin at our main page, [weather.gov/louisville](http://weather.gov/louisville), and click on the "Interactive" link in the Forecasts section of the blue menu bar on the left.

Then, change to "Hourly Weather Graph" on the pull-down menu, and click on the location on the map for which you want your forecast.

NOAA's National Weather Service Weather Forecast Office

## Louisville, KY

Home Site Map News Organization

Local forecast by "City, St" or Zip Code

City, St  Go

Current Hazards  
Watches / Warnings  
Outlooks  
U.S. Hazards  
Hurricane Info  
Safety Rules  
Submit Report

Current Conditions  
Observations  
Satellite Images  
Rivers & Lakes AHPS  
Precip Estimate  
Snow Cover

Radar Imagery  
Local Radar  
Nationwide

Forecasts  
Local Area  
Aviation  
Fire Weather  
Graphical  
**Interactive**  
Weather Radio  
Forecast Discussion  
Wx Planner  
Winter Weather  
Non Precipitation

Experimental Interactive Point Forecasts

Updated 8:50 PM EDT Mon Aug 21 2006

7-Day Text Forecast

7-Day Text Forecast

Hourly Weather Graph

Digital/Tabular

☒ Temperature

☒ Dewpoint

☐ Heat Index

☒ Wind

☒ Rel. Humidity

☒ Sky Cover

☒ Weather

☒ Pcpn. Potential

Read watches, warnings & advisories

Zoom Out

Short Term Forecast

Hazardous Weather Outlook

Map

Latitude

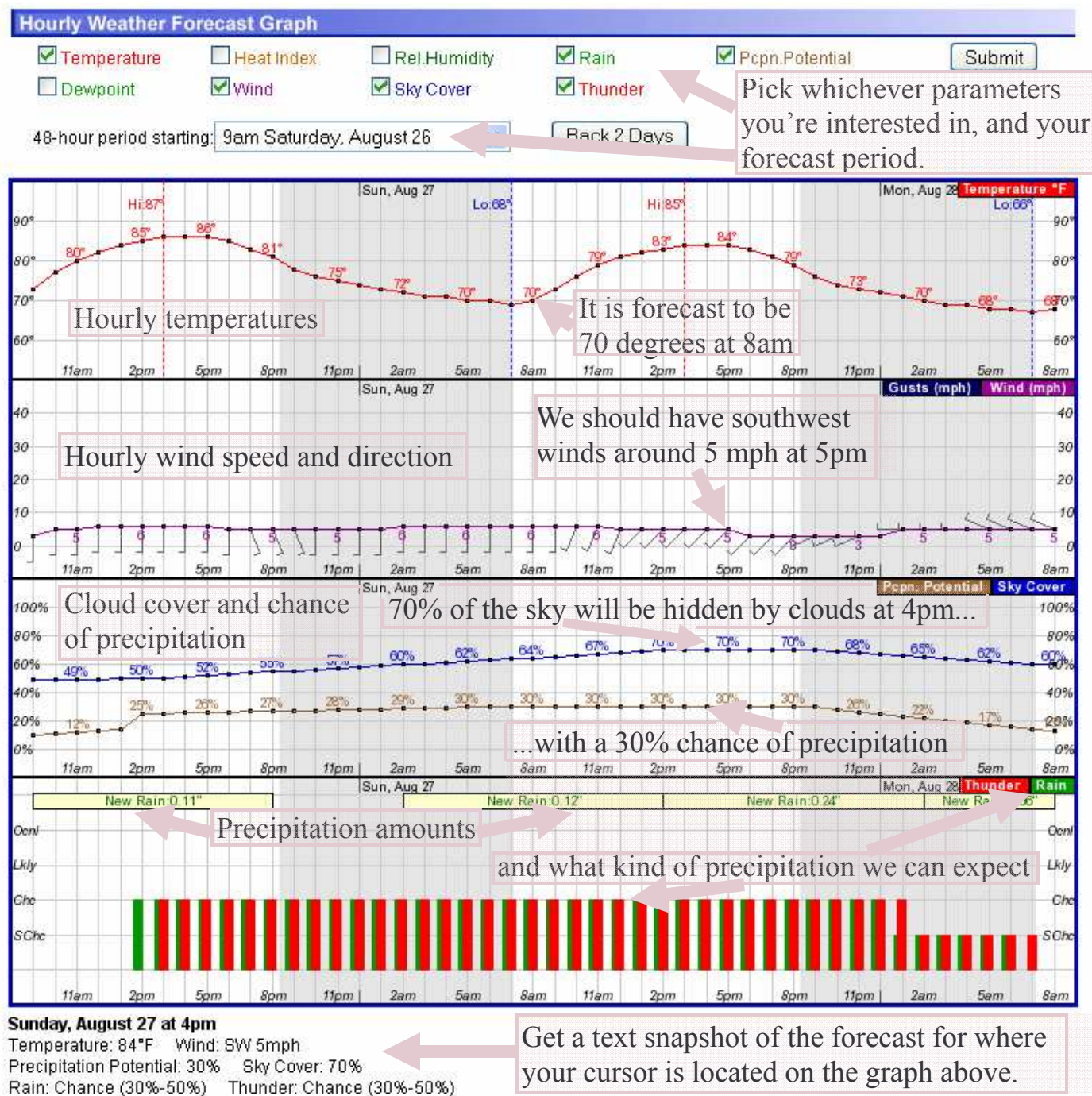
Longitude

Submit

Last map update: Mon, Aug. 21, 2006 at 9:21:26 pm EDT

Results on Page 3!

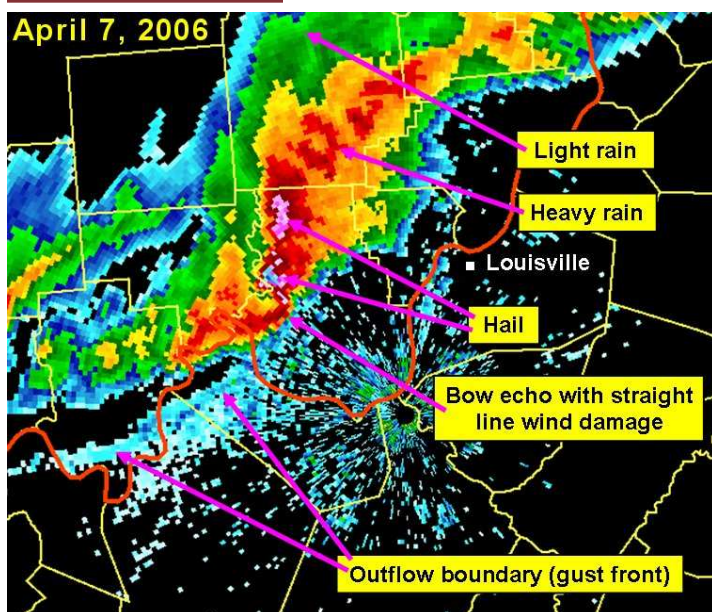
## Interactive Weather Graphs, continued from page 2



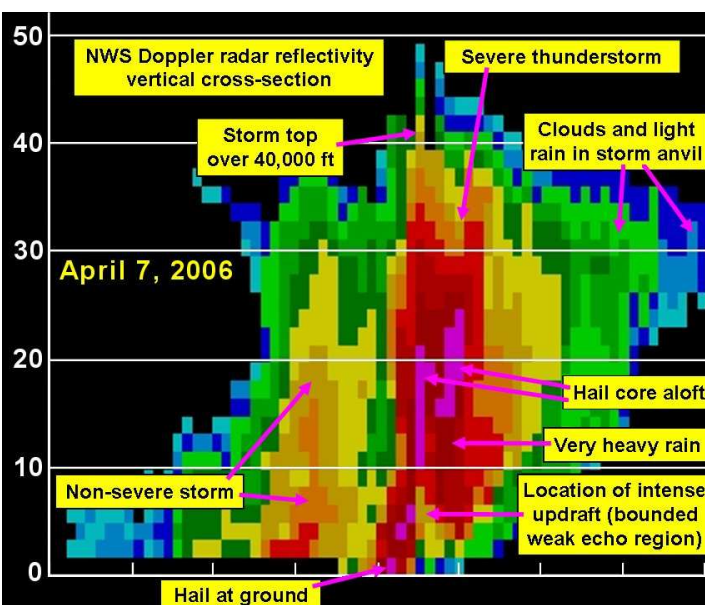
The Interactive Weather Graphs provide a wealth of information that can be easily interpreted at a glance, and provide a much finer level of detail than can be given by a worded forecast. Use these graphical forecasts to plan outdoor activities...to decide when temperature-sensitive plants will need to be brought indoors...to determine when the wind will be right for treating fields or flying a kite...the uses are endless!

# Identifying Important Signatures in NWS Doppler Radar Imagery

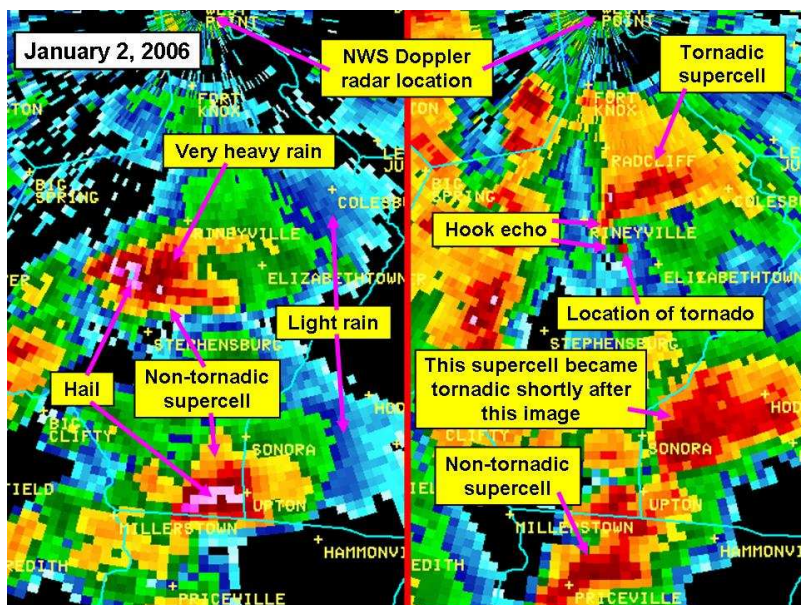
Ted Funk, Science Officer



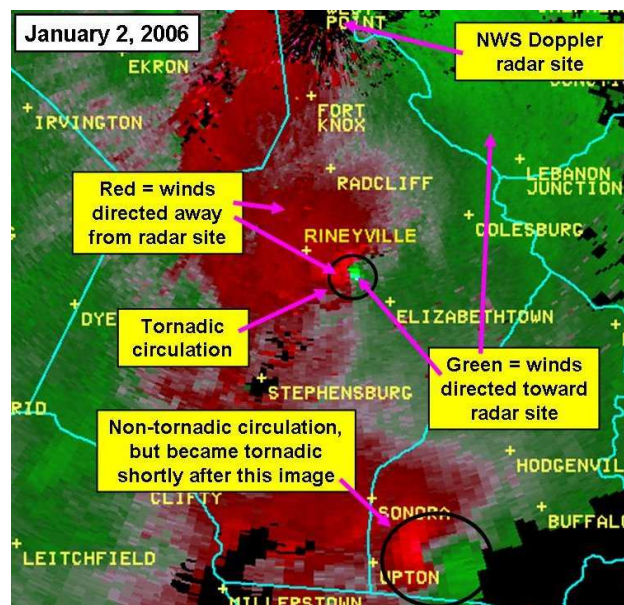
NWS Doppler radar reflectivity data on April 7, 2006 over south-central Indiana (just west of Louisville). A line of thunderstorms is shown; the line bows out (bow echo) on the southern portion of the line.



A reflectivity vertical cross-section on April 7, 2006 showing the structure of a severe supercell storm (right) and a non-severe storm (left). The y-axis is altitude in thousands of feet (e.g., 30 = 30,000 ft).



NWS Doppler radar reflectivity images during the afternoon of January 2, 2006 over Hardin County, KY. The images are 17 minutes apart. The non-tornadic supercell west of Elizabethtown (left) quickly becomes tornadic as it passes just northwest of Elizabethtown (right). Other severe storms are shown farther south in both images; the one in Larue County (right) became tornadic shortly after this image.



NWS Doppler radar storm-relative velocity data on January 2, 2006 over Hardin County and Larue County, KY (image matches right side reflectivity image at left). Radar site is at Ft. Knox (top middle part of image above). The radar "sees" winds directed toward (green colors) and away (red colors) from it.

## Looking for a Guest Speaker for Your Next Meeting?

**John Gordon**

**Meteorologist-in-Charge**

Your 24/7, 365-day a year source of weather information is your National Weather Service office in Louisville. In addition to routine forecasts, the Louisville NWS office serves over 2 million citizens across 59 counties in southern Indiana and central Kentucky by providing all weather warnings, watches, and advisories.

As part of our service to the public, the NWS is ready, willing, and able to come out and give a weather presentation to your organization. Many groups are in need of speakers, and we hope you will consider your National Weather Service, which has served this area since 1871.

We can give presentations ranging from 15 minutes...to an hour...or as long as you wish. Our standard presentation covers

NWS Louisville products and services, our website, weather safety, lightning, flooding, Doppler weather radar, and frequently asked questions. We also have specific talks that discuss flooding, lightning, excessive heat/cold, and severe weather. Our office can customize our presentation to your group's desires. For example, if you wanted someone from our office to talk specifically about tornadoes, we could easily accommodate.

If you are interested in having a member of the National Weather Service come out and give a free weather talk, contact us at 502-969-8842, or e-mail Warning Coordination Meteorologist Norm Reitmeyer at [norman.reitmeyer@noaa.gov](mailto:norman.reitmeyer@noaa.gov) or Meteorologist-in-Charge John Gordon at [john.gordon@noaa.gov](mailto:john.gordon@noaa.gov). We look forward to showcasing our office to your group!

For more information about the NWS and the products we issue, please visit our website ([weather.gov/louisville](http://weather.gov/louisville)).



Meteorologist-in-Charge John Gordon speaks to the Louisville Rotary Club

## NWS Louisville Hosts Aviation Weather Conference

**Chris Smallcomb**

**Senior Meteorologist**

The first-ever Louisville Weather Workshop for Pilots was held Saturday, August 12, 2006 at Louisville Bowman Field's main terminal. It turned

out to be a huge success. The feedback we received from the 65 attendees was decidedly positive.

Part of the reason for the success of the conference was the diverse group of speakers deliv-

ering talks on a wide range of topics, such as weather-related plane crashes, radar interpretation, wind shear, and how the NWS constructs aviation forecasts for pilots.

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## Aviation Weather Conference, continued from page 5

The aviation community relies heavily on NWS forecasts and enthusiastically supported the conference. As a result, we hope to hold additional conferences or workshops in the future.



Chris Smallcomb speaks to the attentive crowd



Science and Operations Officer, Ted Funk, delivers his talk on radar interpretation

## Protect Your Family, Save Your Life

*Sarah Ede*

*Student Intern*

Southern Indiana and central Kentucky have seen their fair share of severe weather over the years. Recently, there was the Hart County tornado that struck in the early morning hours of November 6, 2005, the widespread strong storms in April 2006, and other instances of life-threatening weather.

Mother Nature can throw curve balls to us during any month of the year at any given hour. That's why it's important to always be prepared when hazardous weather strikes. One way of preparing for such events is by purchasing a NOAA Weather Radio All Hazards (NWR).

NOAA Weather Radio All Hazards broadcasts NWS watches, warnings, forecasts, and other weather information 24 hours a day, seven days a week. With the help of the Emergency Alert System, NWR is an all-hazards radio network, making it the most comprehensive weather and emergency information available.

***If a tornado threatened your town while you're sound asleep, how would you know?  
Always be prepared!***

While NWR coverage extends across about 90 percent of the nation, only 5-10 percent of

Americans actually own a weather radio according to NOAA.

It is a good idea to keep your NWR receiver near a window in your home and office for better reception, and have one available while outdoors (boating, camping, golfing, etc.), as well as when traveling in order to be warned if inclement weather strikes. Keeping a portable NWR with your sports equipment is also a good idea for changing weather situations.

NWR receivers can be purchased at electronics stores, retail outlets, department and sporting good stores, boating and marine stores, and via the Internet. Several companies manufac-

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## Protect Your Family, Save Your Life, continued from page 6

ture NWR and it is recommended to buy a radio with the Specific Area Message Encoding (SAME) feature. This feature allows you to program your weather radio for only the counties for which you would like to receive warnings. The NWS makes no money from the sale of NWR and does not support one manufacturer over the other, but we do recommend everyone own at least one NWR.

So the next time severe weather threatens, day or night,

protect your family, and save your life. No matter what the situation, this device is good to have around and costs no more than a new pair of shoes.



Does your child's school have a weather radio?



## What Exactly Are "Mammatus" Clouds?

*Angie Lese*  
*Meteorologist*

Mammatus clouds are hanging protuberances located underneath a cloud. Although these pouch-like clouds can be very ominous in appearance and tend to occur with thunderstorms, they are harmless to us on the ground.

A common misconception is that mammatus clouds indicate that a tornado is about to form. Although tornadic storms may produce mammatus clouds downwind on the under side of the anvil cloud of the thunderstorm, many weak storms and even rain showers can produce these clouds. Mammatus are thus more of a byproduct than a precursor to anything.

So how do these structures form? One theory states that updrafts within a cloud carry air upward that is saturated with precipitation. Then, when the updraft becomes too weak to carry the precipitation, it spreads out horizontally. This precipitation-laden air is heavier than the surrounding air, so next this precipitation will begin to fall back to the ground. The saturated air sinks into the relatively drier air surrounding it. The dry air causes the precipitation to quickly evaporate as it falls, which finally yields the pouch-like clouds known as mammatus. So, mammatus clouds are likely little more than precipi-

tation evaporating before it reaches the ground.

Mammatus are not dangerous and are not necessarily associated with severe weather. However, pilots do find these clouds troublesome as they are often associated with turbulent winds aloft.



Mammatus over Lafayette, IN. Photo by Angie Lese.

# A Student's Perspective of NWS Louisville

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*Andrea Lammers*

*Student Intern*

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I have been a Student Career Experience Program (SCEP) employee here at the Louisville NWS office since the summer of 2005. This is a special student position with the NWS that not only allows a student to work at an NWS office while going to school, but to also become a full-time permanent NWS employee after graduation. During my time as a SCEP, I've gained valuable career experience and have become part of a network of outstanding colleagues.

I was very fortunate to get the SCEP position. I became involved with the Louisville NWS via a non-paid internship through Indiana University Bloomington (IUB). For the first part of summer 2005, I commuted two hours from Bloomington, IN to Louisville, KY to volunteer at NWS Louisville for college credit. After about three months of volunteering, I was recommended to NWS Central Region Headquarters for the SCEP position by my boss, John Gordon (Meteorologist-In-Charge of NWS Louisville). John was extremely persistent in making sure I got this position. This was great for the both of us as he gained a year-round student worker, and I got my foot in the door with the NWS (my dream job). Throughout this past year (my senior year at IUB), I have worked mainly at the Louisville

office but also at the Indianapolis, IN and St. Louis, MO offices.

As a SCEP, I have gained valuable career experience through a mixture of on-the-job training and various projects I have undertaken. Typically my time was split between completing training and working on various projects.

My SCEP training included how to issue public weather forecasts as well as hydrology,



aviation, and fire weather forecasts. Not only did I learn the methodology behind such forecasts but also the software and programs the NWS uses to issue the forecasts. In addition, I also became familiar with NWS instrumentation, 6-hourly weather observations, and climate records, all of which will help me on my way to becoming a fully trained meteorologist.

In terms of my projects as a SCEP, I worked on several educational and outreach projects

including historical weather posters, which can be found on our website by clicking on "Outreach/Educational." I also helped staff weather booths for the Kentucky State Fair and Louisville Science Center, and created a special map of Kentucky for the state Emergency Management director. Other projects to which I contributed that helped enhance NWS Louisville operations included integrating interstate mile markers into NWS warnings, enhancing flash flood warnings, and redesigning the office intranet. The projects that I worked on as a SCEP not only were great resume builders for myself, but brought about beneficial changes for NWS Louisville.

Perhaps the best part of my SCEP experience was developing friendships with my colleagues. At all three offices I was met with kind, caring individuals who were eager to train me and see me advance in my career. I truly value the forecasting knowledge I have gained from numerous mentors who took me under their wing. I developed many valuable friendships with my coworkers that simply make working at the NWS much more enjoyable than your average job. I have especially enjoyed working with the Louisville staff this past year and will miss them dearly when my SCEP experience comes to an end.

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## A Student's Perspective of NWS Louisville, continued from page 8

Though my SCEP experience at NWS Louisville ended in August 2006, I will be moving up in the NWS as a Meteorologist Intern at the Northern Indiana office. Here I will continue on with full-time forecast training and experience. Eventually after I complete all of my training in a year or two, I will advance to a forecaster position. While this will meet my short-term career goals, I have aspirations to become a Senior Meteorologist or maybe even a Meteorologist-In-

Charge at some point in my career.

The SCEP program has been a very beneficial experience for me as it has allowed me to advance my forecasting skills, build a respectable resume, and get my foot in the door with the NWS. I will always be thankful to the staff at NWS Louisville for nurturing and guiding me through the beginning of my meteorology career.



## Another Student's View of NWS Louisville

*Sarah Ede*

*Student Intern*

I have been very fortunate to work and volunteer at NWS Louisville over the past year as part of the Student Temporary Employment Program (STEP). My experiences here have taken me places never imagined.

During this time, I made many friendships while gaining additional knowledge. Being able to work here has exposed me to so many different aspects of the NWS and what it stands for. Helping with severe weather coverage, working on numerous outreach projects and events, learning about NWS products, services, and the forecasting process raised my levels of confidence, self-esteem, and made me more outgoing.

It is hard to pick my favorite moment as a STEP because there are so many of them. One of my fondest memories took place last fall at the National Weather Association Annual Meeting in St. Louis. Presenting a poster with SCEP Andrea Lammers on the Importance of Historical Weather Posters gave me an opportunity to meet others in the weather community while learning more about the field of meteorology.

My experiences as a STEP along with the support of my co-workers helped me grow as a person. Now knowing that I want to work for the NWS as a career will make me work harder to make my forecasting dream come true.

As I leave home to finish my full meteorology degree at the

University of South Alabama, I'm going to miss this office which has become a new family to me. Everyone was always willing to help, no matter how busy they were. This experience has made me realize one can truly reach for their dreams no matter what others say.



# New Kentucky State Map

Andrea Lammers

Student Intern

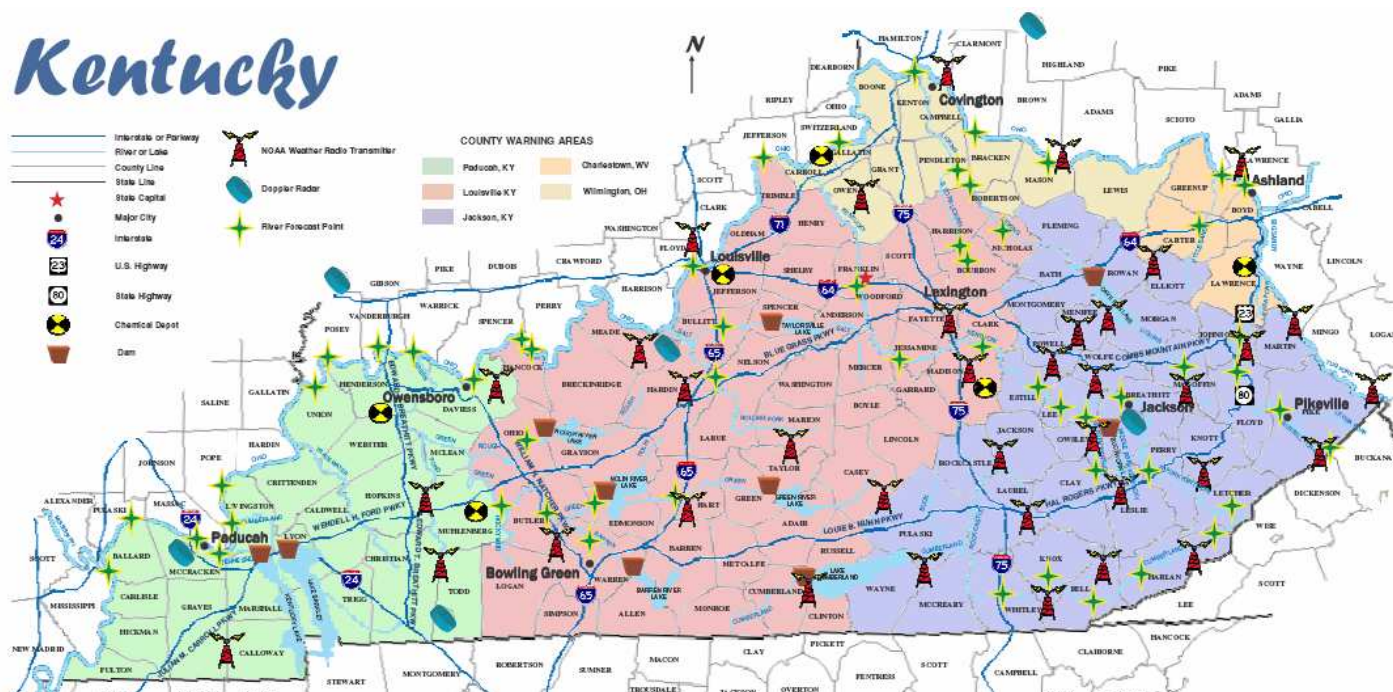
A new Kentucky state map has been created at NWS Louisville, which contains points of interest in Kentucky related to the NWS and emergency management. The map includes a breakdown of each NWS office's County Warning Area (CWA) across the Commonwealth as well as river forecast points, dams, NOAA Weather Radio transmitters, Doppler radar locations, and chemical depots. County names, major roads, rivers, and lakes also are included.

The purpose of this map originally was to aid emergency

managers across the state in planning and decision-making. For instance, by knowing different CWAs, emergency management will be able to communicate with the proper NWS office(s) for a particular hazardous event occurring within or close to the state. Other uses might include locating the nearest river forecast point during a flood or determining which weather radio transmitters to use to send out an AMBER alert. The Kentucky state map has been added as a map overlay in KEMAP (Kentucky Event Mapping and Analysis Portal) and is now being utilized by state emergency man-

agement.

In addition to the map's utility during potential emergencies and hazardous weather, it also can be used by the public as a reference to points of interest across Kentucky. Numerous fair-goers at the Kentucky State Fair in August found the map handy to learn county names, check radar coverage, identify which NWS office serves their county, and to pinpoint the nearest weather radio transmitter. The map is accessible to the public via our website under the "Education/Outreach" section at [http://www.crh.noaa.gov/images/lmk/pdf/KY\\_map.pdf](http://www.crh.noaa.gov/images/lmk/pdf/KY_map.pdf). Check it out!



## More Posters!

Be sure to check out our great free poster selection, including an excellent new NOAA Weather Radio poster written by our own Sarah Ede! Our posters can be found on-line at <http://www.crh.noaa.gov/lmk/?n=outreach>.

# River Summary

Mike Callahan  
Hydrologist

Thankfully, our weather during the summer of 2006 was some of the most pleasant in the country. While we did get some heat, it was not unusual. Rainfall amounts were near normal over most of our region. The driest spot for the summer in central Kentucky and south central Indiana was in Simpson County, with the wettest spot in Dubois County. We experienced some dry periods but the rain generally came at critical times so no areas

were in a prolonged drought.

No river flooding occurred during the summer, as is usually the case. In June, rainfall was a few inches below normal over most of Kentucky but near normal in southern Indiana. For July, locations in south-central Kentucky fell further into the hole, but north-central Kentucky was an inch or two above normal.

A flash flood struck Sellersburg, Indiana on July 14 as five inches of rain occurred in three hours. A clogged highway cul-

vert resulted in backwater flooding of 25 homes.

The first half of August was wetter than normal and helped lessen developing drought conditions over the region. In mid-August, stream flows in southern Indiana and most of Kentucky were running near normal.

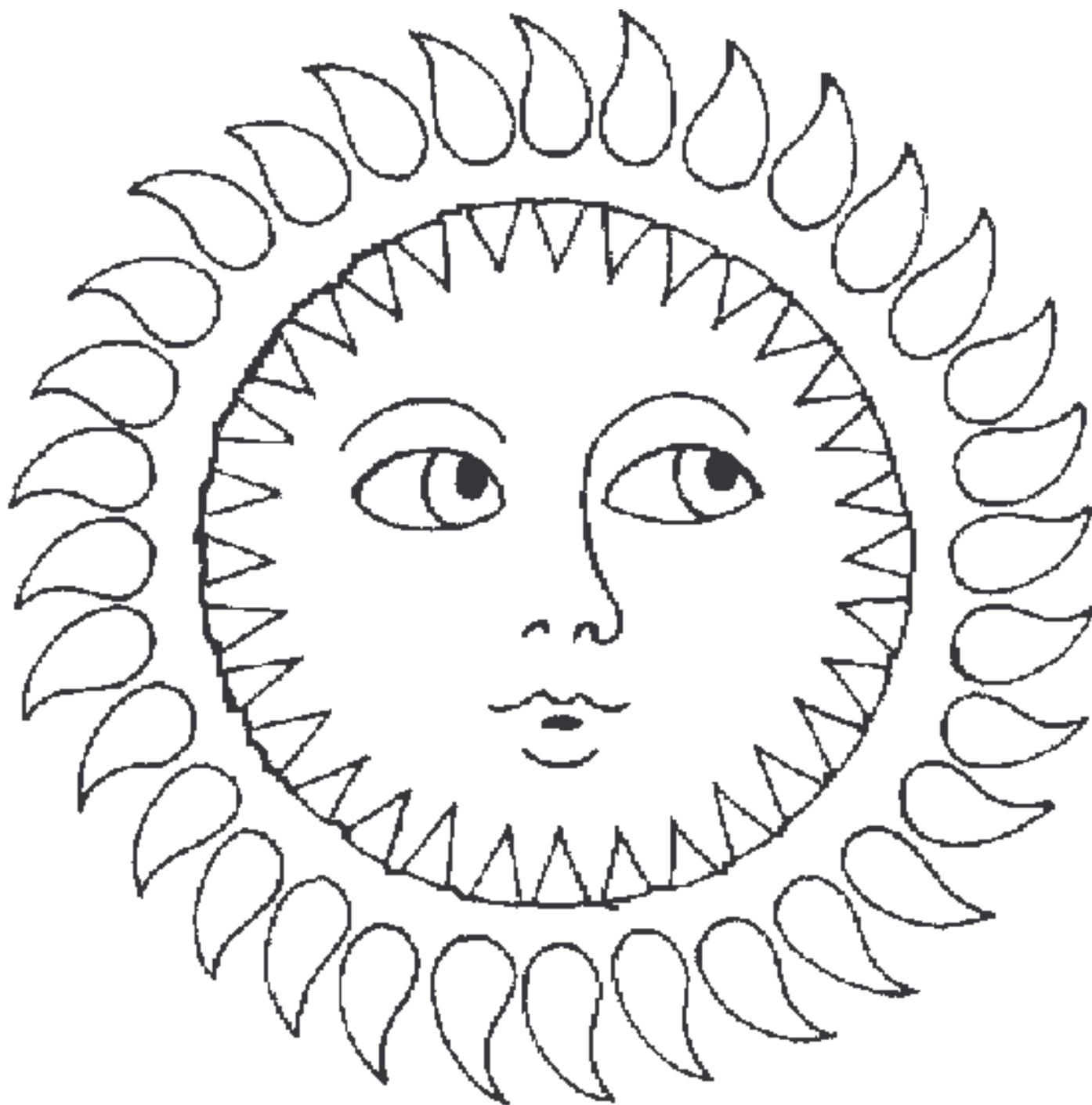
As of mid-August, the outlook for the fall, normally the driest time of year, does not call for above normal precipitation. So if conditions are drier than normal, we may have to deal with a drought.

## Wordsearch

Angie Lese, Meteorologist

Q	J	H	A	R	E	H	T	A	E	W	E	CLOUD
H	A	I	L	A	U	U	P	D	H	I	Z	FLOOD
K	G	G	D	I	T	M	O	E	W	N	L	FOG
U	W	A	N	N	E	I	G	Q	S	D	A	FORECAST
O	M	W	I	I	R	D	P	U	E	G	F	FUNNEL
D	A	B	Y	N	N	I	J	G	Y	U	E	HAIL
A	E	R	R	G	T	T	K	M	N	S	W	HEAT
N	R	P	T	E	A	Y	H	N	N	T	A	HUMIDITY
R	U	X	C	O	L	V	E	G	G	K	T	HURRICANE
O	T	U	T	L	N	L	W	L	I	P	C	ICE STORM
T	A	H	N	I	O	R	A	P	C	L	H	LIGHTNING
A	R	E	X	E	C	U	T	O	B	A	R	RAINING
E	E	F	L	O	T	E	D	O	O	L	F	SNOW
H	P	O	I	F	R	Q	S	M	K	H	U	TEMPERATURE
Q	M	G	A	P	J	A	S	T	U	I	N	TORNADO
X	E	G	N	I	N	R	A	W	O	N	S	UMBRELLA
O	T	S	A	C	E	R	O	F	U	R	E	WARNING
E	N	A	C	I	R	R	U	H	J	X	M	WATCH
												WEATHER
												WIND GUST

## Coloring Contest



### *Hey kids!!*

Color the sun on this page and send it to us by October 31, 2006. Official NWS judges will declare one winner from each of the following age groups:

- Four to seven
- Eight to Twelve
- Thirteen to Sixteen

The best artist will receive an official winner's certificate and a free all-access tour of the National Weather Service in Louisville for them and their immediate family! One entry per person, please.

Send your picture to:

National Weather Service  
Coloring Contest  
6201 Theiler Lane  
Louisville, Kentucky 40229

Include your name, age, address, and phone number. If you wish to have the picture returned to you, include a self-addressed stamped envelope.